

Customer No.: 31561
Application No.: 10/605,084
Docket No.: 9893-US-PA

IN THE CLAIMS

Please amend the claims as follows.

Claims 1-3 (canceled).

4. (currently amended) A method of forming a polysilicon thin film transistor, comprising the steps of:

forming a poly-island layer over a substrate;

forming a gate insulation layer over the poly-island layer;

forming a gate electrode over the gate insulation layer above a section of the poly-island layer destined for forming a channel region;

conducting an ion implantation of the poly-island layer using the gate electrode as a mask to form source/drain regions in the poly-island layer outside the channel region; and

sequentially forming an oxide layer and a nitride layer over the substrate to cover the gate electrode and the gate insulation layer, wherein the oxide layer and the nitride layer ~~of the~~ serving as a inter-layer dielectric layer have a thickness relationship given by the ~~following inequality~~ equation: $T_{ox} \geq (T_{nitride} \times 9000 \text{ \AA})^{1/2}$, where T_{ox} represents the thickness of the oxide layer (in \AA); $T_{nitride}$ represents thickness of the silicon nitride layer and that thickness of the nitride layer is between 50\AA and 1000\AA .

5. (original) The method of claim 4, wherein the step of forming the poly-island layer over the substrate includes the sub-steps of:

depositing amorphous silicon over the substrate;

Customer No.: 31561
Application No.: 10/605,084
Docket No.: 9893-US-PA

conducting a laser crystallization or an excimer laser annealing process to melt the amorphous silicon and re-crystallize into a polysilicon layer; and
conducting photolithographic and etching processes to form islands of polysilicon.

6. (original) The method of claim 4, wherein after forming the poly-island layer over the substrate, further includes conducting a channel ion implantation so that the poly-island layer contains dopants.

7. (original) The method of claim 4, wherein the step of forming a gate insulation layer over the poly-island layer includes carrying out a plasma-enhanced chemical vapor deposition.

8. (currently amended) The method of claim 4, wherein the method may further include the step of forming a lightly doped drain structure between the source/drain region and the channel region.